

IN THE CLAIMS:

Amend Claims 1-3, 5, 9-11, 14, 15, 18 and 20 as follows and add Claims 21-23:

1. (Currently amended) Vehicle comprising

a chassis (1),

at least two mutually separated wheels (3) arranged on a first side (2) of the chassis and two mutually separated wheels (5) on the opposite, second side of the chassis (4), where

the wheels are being arranged to support the chassis when resting on the ground, ~~and whereby~~ with the wheels on the first side are rotatable about axes ~~that are~~ substantially fixed in position in the vertical plane relative to the chassis and ~~where~~ the wheels on the second side are arranged on a frame part (6) ~~that is~~ pivotably arranged relative to the chassis about a substantially central longitudinal axis (8) running between the first and the second sides of the vehicle to create a stability area for the vehicle in the shape of a triangle in the horizontal plane,

an arrangement (12) to determine the position of the vehicle's tipping point (T) in relation to the stability area and thereby the vehicle's stability, and

means (17) ~~to fix~~ for fixing the frame part relative to the chassis on the order of the arrangement to increase the vehicle's stability area to be defined by said wheels, wherein

said ~~means (17) is designed to co-operate with the arrangement so that~~ (12) is structured and arranged to continuously determine the position of the vehicle's tipping point (T).

when the vehicle's tipping point reaches a boundary area (19) of the stability triangle, the fixing means (17) are structured and arranged ~~starts~~ to gradually increase the resistance against a pivoting of the frame part relative to the chassis about said longitudinal axis on increasing departure distance of the tipping point from the triangle's centre to gradually increase the stability area, and

when said tipping point reaches a pre-determined boundary, said fixing means (17) are structured and arranged to completely fix the frame part (6) relative to the chassis (1) and form a stability area ~~to be~~ defined by said wheels.

2. (Currently amended) Vehicle comprising
a chassis (1),

at least two mutually separated wheels (3) arranged on a first side (2) of the chassis and two mutually separated wheels (5) on the opposite, second side of the chassis (4), ~~where~~

the wheels ~~are~~ being arranged to support the chassis when resting on the ground, ~~and whereby with~~ the wheels on the first side ~~are~~ rotatable about axes ~~that are~~ substantially fixed in position in the vertical plane relative to the chassis and ~~where~~ the wheels at the second side are arranged on a frame part (6) ~~that is~~ pivotably arranged relative to the chassis about a substantially central longitudinal axis (8) running between the first and the second sides of the vehicle to create a stability area for the vehicle in the shape of a triangle in the horizontal plane,

an arrangement (12) to determine the position of the vehicle's tipping point (T) in relation to the stability area and thereby the vehicle's stability,

means (17) ~~to fix~~ for fixing the frame part relative to the chassis on the order of

the arrangement to increase the vehicle's stability area to be defined by said wheels,
and wherein

~~it comprises~~ means (32) ~~to attach~~ for attaching each said wheel (5) on the
~~second side of~~ said frame part (6) ~~which is designed to give~~

(i) fix the wheel ~~a fixed~~ in position relative to the frame part (6) and ~~thus~~ ensure
the frame part has a fixed distance to the ground on which the wheel is resting on
application of a load to the wheel below a pre-determined level, ~~which exceeds the~~
~~normal load on the wheel when the vehicle is standing on horizontal ground, and~~

(ii) allow a movement of the wheel ~~in the direction~~ towards the frame part on
~~exceeding said determined level of~~ when the load on the wheel exceeds the pre-
determined level, while storing potential energy and decreasing the distance between
the frame part and the ground on which the wheel is resting ~~at the wheel~~.

3. (Currently amended) Vehicle comprising

a chassis (1),

at least two mutually separated wheels (3) arranged on a first side (2) of the
chassis and two mutually separated wheels (5) on the opposite, second side of the
chassis (4),

the wheels being arranged to support the chassis when resting on the ground,
with the wheels on the first side rotatable about axes substantially fixed in position in
the vertical plane relative to the chassis and the wheels on the second side arranged on
a frame part (6) pivotably arranged relative to the chassis about a substantially central
longitudinal axis (8) running between the first and the second sides of the vehicle to

create a stability area for the vehicle in the shape of a triangle in the horizontal plane,

an arrangement (12) to determine the position of the vehicle's tipping point (T) in relation to the stability area and thereby the vehicle's stability, and

means (17) for fixing the frame part relative to the chassis on the order of the arrangement to increase the vehicle's stability area to be defined by said wheels,

~~according to claim 1,~~ wherein

said means (17) are designed to co-operate with the arrangement (12) so that when the vehicle's tipping point reaches a boundary area (19) of the stability triangle the fixing means (17) starts to gradually increase the resistance against a pivoting of the frame part relative to the chassis about said longitudinal axis on increasing distance of the tipping point from the triangle's centre to gradually increase the stability area, and

when said tipping point reaches a pre-determined boundary, to completely fix the frame part (6) relative to the chassis (1) and form a stability area defined by said wheels, and

further comprising ~~it comprises~~ means arranged to communicate with said arrangement (12) and on obtaining information that said tipping point is located at a distance below a predetermined value from the stability area's outer boundary, ~~which is below a predetermined value~~ lock the drive means of the vehicle to only be able to carry out movements of the vehicle having a stabilizing effect in order to move the vehicle's tipping point away from the stability area's outer edge.

4. (Previously Presented) Vehicle according to claim 1, wherein the arrangement (12) is designed to receive parameters necessary for calculating the position of the vehicle's instantaneous centre of gravity from sensors (13-16) included in the vehicle and/or means for controlling the vehicle's operation, to calculate the position of the vehicles instantaneous centre of gravity, and that the arrangement is arranged to determine the position of said centre of gravity by calculating the position of the vehicle's instantaneous centre of gravity.

5. (Currently amended) Vehicle according to claim 1, wherein the arrangement is arranged to carry out calculations to determine the position of said boundary area and pre-determined boundary (19) while considering the vehicle's instantaneous velocity to reduce the area within the respective boundary as the vehicle increases ~~it~~ its velocity.

6. (Previously Presented) Vehicle according to claim 1, wherein said means (17) for gradually increasing the resistance against pivoting of the frame part (6) relative to the chassis (1) on departure of the tipping point from the triangle's centre is arranged to engage a resistive force to act against the relative movement between the frame part and the chassis intermittently during time periods, whose length per unit time is controlled to increase in order to achieve said gradual increase.

7. (Previously Presented) Vehicle according to claim 1, wherein said means (17) for gradually increasing the resistance against pivoting of the frame part (6) relative to the chassis (1) on departure of the tipping point from the triangle's centre comprises longitudinally variable, pressure-medium-influenced power

means (23) arranged to act between the frame part and the chassis with two pressure chambers (25, 26) connected to one another via an outer bypass conduit (27) with valve means (28), and disposed on both sides of a piston (24), and

the valve means are adjustable to affect the pressure medium's capability to flow from the first chamber to the second chamber and thereby the resistance against a displacement of the piston and a length change of the power means.

8. (Previously Presented) Vehicle according to claim 6, wherein said means (17) is arranged to open and close the valve means (28) intermittently, in a controlled way when the vehicle's tipping point reaches said boundary area.

9. (Currently amended) Vehicle according to claim 7 6, wherein the power means (23) is a hydraulic cylinder.

10. (Currently amended) Vehicle comprising
a chassis (1).

at least two mutually separated wheels (3) arranged on a first side (2) of the chassis and two mutually separated wheels (5) on the opposite, second side of the chassis (4).

the wheels being arranged to support the chassis when resting on the ground,
with the wheels on the first side rotatable about axes substantially fixed in position in the vertical plane relative to the chassis and the wheels at the second side are
arranged on a frame part (6) pivotably arranged relative to the chassis about a
substantially central longitudinal axis (8) running between the first and the second sides

of the vehicle to create a stability area for the vehicle in the shape of a triangle in the horizontal plane.

an arrangement (12) to determine the position of the vehicle's tipping point (T) in relation to the stability area and thereby the vehicle's stability,

means (17) for fixing the frame part relative to the chassis on the order of the arrangement to increase the vehicle's stability area to be defined by said wheels, and

means (32) for attaching each said wheel (5) on said frame part (6) to

(i) fix the wheel in position relative to the frame part (6) and ensure the frame part has fixed distance to the ground on which the wheel is resting on application of a load to the wheel below a pre-determined level, and

(ii) allow a movement of the wheel towards the frame part when the load on the wheel exceeds the pre-determined level, while storing potential energy and decreasing the distance between the frame part and the ground on which the wheel is resting
~~according to claim 2, wherein~~

said means (32) for fixing the wheels (5) to the frame part (6) are designed to attach the wheels (5) to the frame part (6) so that said pre-determined level of the load is adapted so that it is exceeded on driving the vehicle with the wheels in question over an obstruction at a velocity above a pre-determined velocity level.

11. (Currently amended) Vehicle comprising
a chassis (1).

at least two mutually separated wheels (3) arranged on a first side (2) of the chassis and two mutually separated wheels (5) on the opposite, second side of the chassis (4),

the wheels being arranged to support the chassis when resting on the ground, with the wheels on the first side rotatable about axes substantially fixed in position in the vertical plane relative to the chassis and the wheels at the second side are arranged on a frame part (6) pivotably arranged relative to the chassis about a substantially central longitudinal axis (8) running between the first and the second sides of the vehicle to create a stability area for the vehicle in the shape of a triangle in the horizontal plane,

an arrangement (12) to determine the position of the vehicle's tipping point (T) in relation to the stability area and thereby the vehicle's stability,

means (17) for fixing the frame part relative to the chassis on the order of the arrangement to increase the vehicle's stability area to be defined by said wheels, and

means (32) for attaching each said wheel (5) on said frame part (6) to

(i) fix the wheel in position relative to the frame part (6) and ensure the frame part has fixed distance to the ground on which the wheel is resting on application of a load to the wheel below a pre-determined level, and

(ii) allow a movement of the wheel towards the frame part when the load on the wheel exceeds the pre-determined level, while storing potential energy and decreasing the distance between the frame part and the ground on which the wheel is resting
according to claim 2, wherein

said means (32) for fixing the wheels (5) to the frame part (6) comprises a resilient member (33) for each wheel arranged between the frame part and a part (35) that carries the wheel's axle, the resilient member is arranged to be preloaded against stop means (34) arranged to prevent the resilient member from releasing potential energy by distancing the frame part from the part carrying the wheel axle, and

the degree of pre-loading of the resilient member is adjusted to determine the ~~said~~ pre-determined level of load.

12. (Previously Presented) Vehicle according to claim 11, wherein the resilient member is a mechanical compression spring (33).

13. (Previously Presented) Vehicle according to claim 1, wherein it comprises a lifting unit (7) to lift heavy loads, and this lifting unit is arranged on said first side (2) of the chassis.

14. (Currently amended) Method for controlling the stability of a vehicle against tipping[[,]] and which comprises a

chassis (1),

at least two mutually separated wheels (3) arranged on a first side (2) of the chassis and two mutually separated wheels (5) on the opposite, second side of the chassis (4), ~~where~~

the wheels ~~are~~ being arranged to support the chassis when resting on the ground, ~~and whereby~~ with the wheels on the first side ~~are~~ rotatable about axes ~~that are~~ substantially ~~attached~~ fixed in position in the vertical plane relative to the chassis and ~~where the wheels on the second side are arranged on a frame part (6) that is pivotably~~

arranged relative to the chassis about a substantially central longitudinal axis (8) running between the first and the second sides of the vehicle to create a stability area for the vehicle in the shape of a triangle in the horizontal plane,

in which the position the vehicle's tipping point (T) in relation to the stability area and thus the vehicle's stability is determined and the frame part is fixed relative to the chassis when the result of this determination calls for an increase of the vehicle's stability area to be defined by said wheels, wherein

when the determination results in that the vehicle's tipping point reaches a boundary area (19) of the stability triangle, ~~it begins to gradually increase~~ a resistive force is gradually increased that opposes a pivoting of the frame part relative to the chassis about said axis on increasing ~~departure~~ distance of the tipping point from the centre of the triangle to gradually increase the stability area, and

~~when said determination results in that~~ the tipping point reaches a pre-determined boundary, the frame part is completely fixed relative to the chassis and creates a stability area defined by said wheels.

15. (Currently Amended) Method according to claim 14, wherein ~~[[,]]~~ said increase of the resistive force takes place by engaging a resistive force to act against the relative movement between the frame part (6) and the chassis (1) intermittently during time periods, whose length per unit time is controlled to increase in order to achieve said gradual increase.

16. (Previously Presented) Method according to claim 15, wherein said gradual increase of the resistive force against a pivoting of the frame part (6) relative to the chassis (1) takes place by intermittently, in a pulsing way, opening and closing valve means (28) arranged in an outer bypass conduit (27) that interconnects two pressure chambers (25, 26) that are disposed on opposite sides of a piston (24), to, in this way, affected the capability of the pressure medium disposed in the pressure chambers to flow from one chamber to the other chamber and thereby the resistance against a displacement of the piston.

17. (Previously Presented) Computer program that is directly loadable into the internal memory of a computer and comprises software code parts to control the steps of claim 14 when the program is run on the computer.

18. (Currently Amended) Computer program ~~according to claim 17~~ provided at least partly via a network such as the internet, directly loadable into the internal memory of a computer and comprising software code parts when the program is run on the computer to control the steps of a method for controlling the stability of a vehicle against tipping.

the vehicle comprising a chassis (1).

at least two mutually separated wheels (3) arranged on a first side (2) of the chassis and two mutually separated wheels (5) on the opposite, second side of the chassis (4), with the wheels arranged to support the chassis when resting on the ground.

the wheels on the first side rotatable about axes substantially fixed in position in the vertical plane relative to the chassis and the wheels on the second side arranged on a frame part (6) pivotably arranged relative to the chassis about a substantially central longitudinal axis (8) running between the first and the second sides of the vehicle to create a stability area for the vehicle in the shape of a triangle in the horizontal plane,

in which the position the vehicle's tipping point (T) in relation to the stability area and thus the vehicle's stability is determined and the frame part is fixed relative to the chassis when the result of this determination calls for an increase of the vehicle's stability area to be defined by said wheels,

wherein when the determination results in that the vehicle's tipping point reaches a boundary area (19) of the stability triangle, a resistive force is gradually increased that opposes a pivoting of the frame part relative to the chassis about said axis on increasing distance of the tipping point from the centre of the triangle to gradually increase the stability area, and

when the tipping point reaches a pre-determined boundary, the frame part is completely fixed relative to the chassis and creates a stability area defined by said wheels.

19. (Previously Presented) Computer-readable medium with a registered program thereon, which is designed to cause a computer to control the steps according to claim 14.

20.(Currently Amended) Vehicle comprising

a chassis (1),

at least two mutually separated wheels (3) arranged on a first side (2) of the chassis and two mutually separated wheels (5) on the opposite, second side of the chassis (4),

the wheels being arranged to support the chassis when resting on the ground, with the wheels on the first side rotatable about axes substantially fixed in position in the vertical plane relative to the chassis and the wheels at the second side arranged on a frame part (6) pivotably arranged relative to the chassis about a substantially central longitudinal axis (8) running between the first and the second sides of the vehicle to create a stability area for the vehicle in the shape of a triangle in the horizontal plane,

an arrangement (12) to determine the position of the vehicle's tipping point (T) in relation to the stability area and thereby the vehicle's stability,

means (17) for fixing the frame part relative to the chassis on the order of the arrangement to increase the vehicle's stability area to be defined by said wheels, and

means (32) for attaching each said wheel (5) on said frame part (6) to

(i) fix the wheel in position relative to the frame part (6) and ensure the frame part has fixed distance to the ground on which the wheel is resting on application of a load to the wheel below a pre-determined level, and

(ii) allow a movement of the wheel towards the frame part when the load on the wheel exceeds the pre-determined level, while storing potential energy and decreasing

the distance between the frame part and the ground on which the wheel is resting, and
~~according to claim 2, wherein it comprises~~

means arranged to communicate with said arrangement (12) and on obtaining information that said tipping point is located at a distance below a predetermined value from the stability area's outer boundary, ~~which is below a predetermined value~~ lock the drive means of the vehicle to only be able to carry out movements of the vehicle having a stabilizing effect in order to move the vehicle's tipping point away from the stability area's outer edge.

21.(new) Vehicle according to claim 1, wherein said wheels (5) mounted on the second side are mounted underneath said pivotally-arranged frame part (6).

22. (new) Vehicle according to claim 2, wherein said wheels (5) mounted on the second side are mounted underneath said pivotally-arranged frame part (6).

23.(new) Method according to claim 14, wherein said wheels (5) mounted on the second side are mounted underneath said pivotally-arranged frame part (6).